DEVELOPMENT OF THE SPECIAL WASTE PROGRAM FOR BRITISH COLUMBIA
-- TOWARDS A HEALTHIER ENVIRONMENT

THE REPORT OF THE SPECIAL WASTE ADVISORY COMMITTEE

VANCOUVER, BRITISH COLUMBIA MAY 31, 1988

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION	4
WHAT ARE SPECIAL WASTES?	6
THE PROBLEM	7
THE OPTIONS FOR SPECIAL WASTE MANAGEMENT	8
PRINCIPLES OF SPECIAL WASTE MANAGEMENT FOR BRITISH COLUMBIA	13
PROCESS	15
PUBLIC CONCERNS	23
INDUSTRIAL CONCERNS	25
MUNICIPAL CONSIDERATIONS	27
REGULATIONS & ENFORCEMENT	28
EDUCATION	31
RESEARCH AND DEVELOPMENT	32
SELECTION OF THE OPERATOR	33
RECOMMENDATIONS FOR A SITE	35
PROVINCIAL SPECIAL WASTE ADVISORY COMMITTEE	37
COMMUNITY MONITORING COMMITTEE	39
RECOMMENDATIONS	40
APPENDICES (Under separate cover.)	42

DEVELOPMENT OF THE SPECIAL WASTE PROGRAM FOR BRITISH COLUMBIA

EXECUTIVE SUMMARY

The Special Waste Advisory Committee was appointed in February 1987 by British Columbia's Minister of Environment and Parks to review options for a comprehensive special waste management system for the province and make recommendations.

In reviewing the options, the Committee considered waste streams, waste volumes, the economic diversity and development of the province, existing waste services and the commitment of the Government of British Columbia to legislate and enforce special waste regulations.

The Committee reviewed work done in previous years on waste management problems in British Columbia, soliciting and receiving helpful input from many interested groups and individuals. It also visited several waste facilities in North America and Europe.

Public participation was considered an important aspect of the Committee's work. The Committee communicated extensively with the public through news releases, advertisements and newspaper, radio and television interviews. Input from the public was received through a series of open houses, public meetings and meetings with elected municipal officials, as well as by mail and telephone.

The Committee sought companies qualified in special waste management throughout North America and Europe. Following a detailed search-and-review process and technical and economic assessment of proposals, the Committee recommended in an interim report to the Government of British Columbia in December 1987 that the Envirochem Group --consisting of Envirochem Services, Ensco Incorporated, Sandwell Swan Wooster and Stablex Canada--be chosen as the joint-venture to construct and operate the special waste management system.

During the siting process, the Committee visited a number of potential host communities together with representatives of the Envirochem Group. Meetings held in those communities enabled local officials and citizens to more effectively assess the proposal, environmental, health and safety factors, and economic benefits.

The Envirochem Group is continuing this work at the community level. The objective is to choose a site on the basis of community interest and acceptance, as well as on the physical characteristics of the area required by provincial special waste regulations. The Committee recommends that the process for site selection be continued in the Ashcroft-Cache Creek area where public acceptance has been indicated in a ballot by eligible voters and where geological and climatic conditions appear favorable. However, the process could continue as well in other areas where interest has been expressed.

The Committee suggests that comprehensive provincial special waste regulations will be the key driving force behind the effective management of special wastes in British Columbia. Not only must regulations be in place, means of enforcement must be developed and carried out by the Ministry of Environment and Parks.

Among the Committee's other major recommendations:

- Education of the public and waste generators be made a priority on a continuing basis, in schools, universities and in the workplace.
- Research and development be made an integral part of the special waste management process to ensure that optimal recycling, reuse and waste reduction occur and that treatment processes and technologies continue to be the best available.
- A permanent provincial special waste advisory committee be established to assist waste generators, the public, government and the operator in managing special wastes.
- A monitoring committee be established in the host community, reporting to the local government and the provincial committee.
- The Government begin a program of evaluation on all municipal landfills, establish operating standards and training for municipal landfill workers, initiate programs of waste separation for households, and establish special waste collection points in municipalities.
- That a moratorium on other new special waste offsite treatment facilities be maintained until the company, B.C. Special Waste Services Inc., begins to treat special wastes.

INTRODUCTION

The Special Waste Advisory Committee was appointed in February 1987 by British Columbia's Minister of Environment and Parks to review options for a comprehensive special waste management system for the province. Appointed to the committee were Dr. David A. Boyes (Chairman), E.E. (Ted) Jefferys and M. Lael Hamilton.

Dr. David Boyes is a distinguished Vancouver physician and cancer specialist. At the time of his appointment to the Committee, he was chairman of the professional affairs committee of the National Cancer Institute and the Canadian Cancer Society. In addition to.his practice as an obstetrician and gynecologist, Dr. Boyes has taught at the University of British Columbia. He has an international reputation as a consultant and lecturer on cancer prevention and control and is a former vice-president of the Save Our Parkland Association.

Edward Jefferys is president of Cascade Chemical Commodities Ltd. of Vancouver. He is a former chairman of the Pesticide Control Board of British Columbia, past president of the British Columbia Paint Manufacturers' Association, and has been involved in marketing industrial chemicals in central and western Canada for 35 years.

Lael Hamilton, a former director of the South Granville Ratepayers' Association in Vancouver, has served on the Court of Revision in that city. She also has served as an executive and committee member on

school-parent associations, has a lengthy record of community service, and has been active in a number of charitable and heritage organizations.

The balance and mix of expertise among the three members of the Committee was important to their assignment. In addition, the Committee was independent of government and industry and met with no interference from government.

Following are the Terms of Reference and guidelines (Appendix I) established for the Committee under British Columbia's Environment Management Act:

- Review and assess the administrative and technical options for effectively and comprehensively managing special wastes in the Province.
- Provide input to Government on the operation and administration of special waste treatment, disposal and storage facilities.
- Give principal consideration to public safety and environmental protection.
- Seek proposals for commercial special waste treatment/disposal facilities at specific sites within the Province.
- Review and assess the technical and administrative feasibility of each proposal, as well as the potential environmental and social acceptability.
- Examine opportunities for reduction, reuse, recycling and recovery of special wastes generated in British Columbia and identify issues requiring further research.
- Ensure participation of industry representatives, elected officials and the general public in the formation of the Committee's recommendations.

WHAT ARE SPECIAL WASTES?

Special wastes are substances that are potentially harmful to our health and environment if not treated in special ways. These include used oils and solvents from vehicle service, the transportation and printing industries; acids and bases from petroleum and chemical companies; and heavy metals and chemicals in sludges from manufacturing facilities. Solvents, ketones, chlorinated hydrocarbons, dioxins, mercury, lead, zinc, cadmium, arsenic, cyanide--these are just a few of the thousands of special wastes generated to satisfy society's everyday needs.

Special wastes are in our homes, as well as in the workplace. They can be found under kitchen sinks, in medicine cabinets, and on shelves in garages. They include cleansers, solvents, paints, medicines and pesticides--products that should not be dumped down the drain or disposed of in municipal landfills.

(It is important to note that, in British Columbia, radioactive and nuclear wastes are not considered to be special wastes. In other words, the special waste management system being recommended will not handle or accept radioactive and nuclear wastes.)

THE PROBLEM

The mismanagement of special wastes represents a growing threat to the local and global environment. To ignore them completely or dispose of them carelessly is no longer a reasonable option for society. Special wastes have the potential to contaminate our air, water and soil, accumulate in the food chain and threaten society with a variety of diseases.

In the United States, communities have been forced to evacuate because of the threat from improperly handled special wastes. In Canada, there is increasing concern about the impact these wastes appear to be having on people, wildlife and the environment generally.

The threat from special wastes makes it obvious that a management system to properly handle, treat and contain these substances is needed. It must be a system that will do the job effectively and safely. (Appendix XXIII - Fact Sheets.)

THE OPTIONS FOR SPECIAL WASTE MANAGEMENT

Continuing Current Practices

The potential threat to the environment from the inappropriate disposal of special wastes is growing steadily. Many of these wastes now are dumped into sewers, municipal landfills and ditches, or buried in the ground where they can contaminate soil, vegetation and fresh water supplies.

Shipping British Columbia's special wastes to the United States is becoming increasingly costly and certain wastes such as PCBs are no longer accepted. The liability to waste generators persists forever, and generators have no control over the means of disposal. Because of the potential liabilities, many industries will no longer move into an area without proper provision for special waste disposal.

Waste Abatement

Waste abatement can sometimes be achieved in existing plants which generate special wastes. This is accomplished through changes in the manufacturing process, or by replacing hazardous materials with non-hazardous substitutes to eliminate special waste discharge altogether.

Waste Reduction

Waste reduction, also known as source reduction or waste minimization, takes place by introducing new process technologies or product substitution to the manufacturing process.

Re-Use Or Reclaim

Re-use or reclaim occurs when a special waste stream is re-used directly by the waste generator or another industry.

Recycling Or Recovery

Recycling or recovery of special wastes involves either in-house or off-site treatment so that the wastes can be used as a resource by the original generator or another party. Used motor oils and solvents are examples of commonly recycled materials.

Incineration

Lower temperature incinerators, which operate at about 500 degrees Celcius, can be used for some sludges and tars. But to destroy chlorinated hydrocarbons such as PCBs, consistent operating temperatures in the range of 1200 degrees Celcius must be maintained. (See Appendix IX-Prof. John Grace's Incineration Report.)

Physical-Chemical Treatment

Physical-chemical treatment is often used to reduce the volume of special wastes before additional treatment or disposal.

Physical treatments include filtration, evaporation, precipitation, and absorption of toxic substances by activated carbon.

Chemical treatment can reduce the potential danger of special wastes through chemical reactions. For example, acidic and basic wastes can be neutralized to form less hazardous substances, or a chemical agent can be added to achieve a similar result through an oxidization or reduction reaction.

Biological Treatment

Some special wastes can be degraded by the metabolic action of biological organisms such as bacteria, fungi or protozoa. This type of treatment is the basis of many municipal sewage systems, which expose wastes to micro-organisms through the use of activated aeration tanks, special filters, aerated lagoons, stabilization ponds and composting.

Another form of biological treatment involves spreading wastes of a surface soil where they are degraded by micro-organisms and, at the same time, their volume is reduced by natural evaporation. This method can be an effective way of treating biological sludges.

Secure Landfills

Secure landfills are designed to contain neutralized and stabilized special wastes to ensure that they cannot find their way into water supplies, water tables and the atmosphere.

In British Columbia, secure landfills must be double-lined and covered during operation. Upon closure, the secure landfill must be capped with barrier materials to prevent water from entering the landfill and to minimize the possibility of leakage or movement of wastes. A monitoring and leachate collection system must be in place during operation and for an indefinite period after closure.

The Integrated Special Waste Management System

The integrated special waste management system is one that can handle all known special waste streams. It will include a combination of the previous management options discussed in this section.

The Committe's Choice of an Integrated System

The Special Waste Advisory Committee recommends an integrated treatment facility for British Columbia. The major reasons for this choice include the following:

- The special waste stream in the province would not support regional facilities on an economically viable basis.
- Incineration is necessary due to the composition of the waste stream in B.C. The ash residues from special waste incineration must be treated and placed in a secure landfill.
- The waste stream includes chemicals that must be processed in a physical-chemical treatment plant, stabilized and buried in a secure landfill.

- The secure landfill must be sited according to B.C. regulations. The requirements of the regulations help determine where the treatment facility is located.
- Rather than having to transport special wastes and residues to different locations, it is good logistics, safer and more cost effective to have a single treatment facility site.
- All processes require the services of a laboratory and specialized personnel; one location for these services would be best.
- Integrated plants have been operating in other jurisdictions for many years and have proven to be the safest and most efficient.
- Host communities have more incentive to support an integrated facility, with its size and refinements as well as its larger employment base.
- The operator of an integrated facility can monitor and control emissions and comply with regulations more efficiently. The goal of zero emissions from all sources can be attained by integrated facilities, with their sophisticated, high-technology processes.

PRINCIPLES OF SPECIAL WASTE MANAGEMENT FOR BRITISH COLUMBIA

Following a literature review, consultation with many groups, and a review of the experience in other jurisdictions and the problems in British Columbia, the following concepts were developed by the Special Waste Advisory Committee as guidelines:

1. In-house reduction and recycling should be considered the preferred management options in the handling of special wastes. Therefore, in-house treatment should be encouraged as much as possible.

2. Through discussions with the Ministry of Environment in Alberta, we determined that it was not possible to send British Columbian wastes to the Swan Hills facility.

3. New and high-tech industries require the ability to safely treat special wastes. The long-term liability attached to shipping special wastes to the United States, the inability to ship some types of special wastes to that country and the refusal of Alberta to take these materials means that British Columbia must develop its own special waste treatment system.

4. There can be no improvement in our environment until regulations governing special wastes are in place, and we cannot enforce regulations until there is a facility to take care of special wastes generated in the province. Enforcement of regulations is the most important driving force for the successful clean-up of our environment.

5. Education of the public and industry is an important part of any program. Indeed, no program can be successful in improving the environment unless the public wishes this to happen. It is impossible to take enforcement to the point where every small business and household can be monitored.

6. In offering a special waste facility to a community, we have assured ourselves that this new industry, by its very nature and by the regulations imposed upon it by government, is safe. The transportation of special wastes is a minimal hazard on roads and railways since special wastes are only one percent (1%) of the total volume of hazardous goods transported, and these are strictly regulated.

7. The process envisioned by the Ministry of Environment and Parks--i.e., a private company would operate the facility and the government would monitor it--was philosophically acceptable and appropriate to the Committee. It is almost always inappropriate for an operation to regulate itself.

8. The design and size of the facility and the technology employed should meet our waste streams as known today and be flexible enough to take care of new waste streams that will undoubtedly appear in the future. The system must include collection in every municipality and be accessible to every householder and small business.

9. An integrated system providing complete coverage of the known waste streams is the best process to take care of special wastes. Small specialized systems are to be encouraged in-house, but commercially they are prone to choose wastes that provide the greatest profit rather than tending to the whole waste stream.

10. The Committee will only recommend proven technology that has worked well and has met environmental regulations in other jurisdictions.

11. Knowledge of potentially hazardous materials should begin when and where they enter the waste stream and tracking should continue as long as they remain a hazard.

12. Siting must be socially acceptable to the host community. Therefore, a voluntary siting process will be undertaken.

13. Public participation is essential in the process of developing a special waste management plan and in the ongoing development of the program.

PROCESS

The Special Waste Advisory Committee's first task in the process was to review the work and initiatives which have taken place in the province over the past few years. These efforts provided important background to the Committee.

The Committee reviewed the evolution of the regulatory frameworks developed by Canada's federal and provincial governments and agencies, as well as the Environmental Protection Agency in the United States and European agencies, to control and minimize the impact of special wastes on the environment. The proposal to the Ministry of Environment by Genstar and IT Corporation in 1983 and its subsequent withdrawal was reviewed. Data on estimates of existing waste streams and information in reports, such as those by Gore and Storrie Ltd. and Reid, Crowther and Partners Ltd. were considered. The Committee also studied the report to the Minister of Environment by the Hazardous Waste Advisory Committee appointed in 1980.

It was evident to the Committee that many groups and individuals contributed extensively towards--and demonstrated a true concern for--proper waste management in the province. The opinions of these people were considered important, and invitations for further meetings were extended (Appendix IV). This input from industry, regulators, environmental groups, professional associations and the public was received on a continuing basis throughout the review.

The Committee also studied efforts being made in special waste management in other jurisdictions in North America and Europe.

Several special waste treatment facilities were visited. These included the facilities in Swan Hills, Alberta operated by Chem-Security Ltd.; El Dorado, Arkansas operated by Ensco Inc.; Nyborg, Denmark operated by Kommunekemi als: Norrtrop, Sweden operated by Sakab; and Riikimaki, Finland operated by Ecokem Ltd. Whenever possible, the Committee met with the operators, government officials and members of the community.

The Committee also visited the Canada Cement La Farge Ltd. plant in Richmond, B.C., a potential incineration site; the treatment and recycling facilities of A.A. Anderson Tank Services Ltd. of Richmond, B.C.; Mohawk Oil Co. Ltd. of North Vancouver, B.C.; Insolco Ltd. of Surrey, B.C., and the Ministry of Environment and Parks' special waste transfer station in Surrey.

To encourage public participation, an advertisement--"We Want Your Views"--requesting written submissions was published in daily and weekly newspapers throughout British Columbia (Appendix III). A series of "Open Houses" was held by the Committee in Communities throughout the province (Appendix XI).

These widely-advertised informal meetings provided written and visual material on what special wastes are, and effective treatment practices being carried out in other jurisdictions throughout the world. The Committee had the opportunity to meet with the public in these locations and receive their views and comments. Dr. Boyes accepted all opportunities to speak with the media and this was effective as a means of beginning a dialogue with the public and furthering public awareness.

Early in the process, all municipalities and regional districts were contacted to advise them of the Committee's work, and dialogue with the communities was maintained throughout the process. The Open House tour gave the Committee an opportunity to meet local officials and elected representatives. The Committee also participated as exhibitors at the Union of British Columbia Municipalities conference in September 1987 and members were available for discussion throughout the conference (Appendix X).

The Committee enlisted the expertise of several consultants to assist in its work. These included Environmental Resource Management (technical considerations); Professor John Grace, head of chemical engineering at the University of British Columbia (scientific); The Coopers Lybrand Consulting Group (financial); Richard Campbell, barrister and solicitor (legal); and Don LeBlanc, Walden Public Relations Limited (public awareness).

At the outset, an administrative assistant/researcher, Juliana Pasko, was hired and a public office opened in Vancouver where a library was maintained and proposals were made available to the public.

From data accumulated from its consultants and as a result of studies, the Committee adopted a two-stage approach to soliciting proposals for commercial special waste facilities at specific sites. First, the most qualified proposal(s) would be selected and, second, a site(s) would be recommended on the basis of a cooperative process with communities, public acceptance and technical requirements pertaining to geology, weather and other conditions.

In seeking proponents, the following steps were taken:

A. Newspaper advertisements were published in key centres of North America and Europe (Appendix VI).

B. Request for Qualifications (RFQs) were distributed to 289 companies which responded to the advertisements (Appendix VII).

C. Completed RFQs were received from 39 companies or groups of companies (Appendix VII).

D. Based on a review of the RFQs, 11 companies or groups of companies received Request for Proposals (RFPs). (Appendix VIII).

E. Proposals were received from five (5) joint-venture companies.

The proposals received were from the following joint-venture companies:

CHEM-SECURITY LTD./International Technology Corporation

DILLINGHAM CONSTRUCTION LTD./A & A Anderson Tank Service Ltd./Delta Projects Inc./Mohawk Oil Co. Ltd.

ENVIROCHEM SERVICES/Ensco Incorporated/Sandwell Swan Wooster Inc./ Stablex Canada Inc.

LaFARGE CORPORATION/Laidlaw/Systech Corporation/GSX

U.S. POLLUTION CONTROL, INC./PPM Canada, Inc.

These proposals were similar in a technological sense in that each group would employ a combination of high-temperature incineration, physical/chemical treatment, solidification of residuals and a secure landfill in the management of special wastes.

All proposals were available for public scrutiny at the Committee's Vancouver office and a matrix, a summary of the proposals, was widely distributed (Appendix VIII).

Municipal officials, government agencies and special interest groups expressing interest in the Committee's work were invited to a technical review of the proposals held in Vancouver on October 21, 1987. Thirty-four people attended the day-long review, which included presentations by each of the proponents and questions from the floor (Appendix XII).

Many interested groups met with the Committee during the course of the review and forty-six briefs were submitted. A public meeting held in Vancouver on November 9, 1987 heard a number of submissions from the public and special interest groups, including comments on the proposals and special waste management in general (Appendix XVIII).

The Committee completed a detailed evaluation of the five proposals in keeping with Section 12 of the RFP. Financial considerations were important in the assessment, particularly in view of the similarities in the technologies proposed. Financial criteria included capital costs, operating costs, treatment costs to waste generators, and financial viability.

The Envirochem Group (Envirochem Services/Ensco Incorporated/Sandwell Swan Wooster/Stablex Canada) was the Committee's choice to establish special waste facilities in British Columbia (See Appendix XXII).

In December, 1987 the Committee submitted an Interim Report to the Minister of Environment and Parks containing its recommendation of the Envirochem Group. In January 1988, the Minister of Environment and Parks endorsed the Committee's recommendation and the Envirochem Group announced a week later that it would form a new company--British Columbia Special Waste Services, Inc.

As a result of activities and dialogue with communities in previous months, several municipalities and regional districts indicated an interest in exploring the possibility of becoming a host community. Upon announcing the selection of the operator and that the site selection process was to begin, several more communities indicated interest. (It should be noted that municipal and regional district elections had taken place in November and a review was required in some cases).

The Committee and the operator considered the process for selecting a site, giving attention to:

a) steps for adequate community information

b) community acceptance

c) technical and economic siting criteria.

Initial contact with communities was usually through a presentation to elected officials. If these officials decided that the project had potential merit for their area, public meetings were held at which information about the facility and the siting process was presented. Existing data on the availability and suitability of sites in the area was also explored in a general sense.

If, after these meetings, it was decided to proceed with a community interaction program, the program was planned with the help and co-operation of local officials. The community was encouraged to participate in the planning of the information program to ensure it responded to the needs of the area and its residents. Local media involvement, store front open houses, meetings with special interest groups and citizen groups, slide presentations and public meetings were all used to disburse information to the community and respond to concerns.

Following this program, an expression of public opinion was sought from the community. If the public indicated acceptance, the community would begin negotiations with the company. The operator and the community(ies) would continue the interaction program and specific site evaluations would take place before permitting.

PUBLIC CONCERNS

The committee found that throughout the province the public is concerned about the commitment of the Government to enforce the new special waste regulations. Many examples were given of the Government's failure in the past to make industry comply with regulations pertaining to effluent. This concern is at the heart of the public's apprehension about the degree of safety involved.

The public also is concerned about the local environment and municipal garbage landfills. People are alarmed that special wastes are being placed in landfills where they can gain access to ground water, or streams, rivers and lakes. The fact that a special waste management facility will reduce the dangers to the environment appears to be reassuring to most.

Other matters of concern included the transportation of special wastes on the province's highways, the suggestion that the existence of a special waste treatment facility will discourage waste generators from reducing and recycling wastes, monitoring, long-term liability for the secure landfill, and potential adverse impacts on tourism in the host area. Another concern was that the Lower Mainland should treat its special wastes rather than ship them to a treatment facility elsewhere. The idea of a community monitoring committee met with a great deal of acceptance.

The Committee received a total of 46 submissions. The following represented the concerns expressed in most submissions (Appendix XIX):

- The British Columbia Medical Association's Environmental Committee met with the Committee and presented a brief which included its policy statement on principles and practices of hazardous waste management. The main concern of the BCMA brief was that any treatment process be safe and that adequate public input into the process be provided.

- The Westcoast Environmental Law Association met with the Committee several times and presented an extensive brief commenting on all aspects of special waste management. The association also sought public funding for interveners.

- The Canadian Council of Women recommended strict enforcement of regulations, monitoring and expressed concerns regarding cost of treatment, liability and site selection.

- A brief from the Consumers' Association of Canada (B.C. Branch) expressed views similar to the Canadian Council of Women and Westcoast Environmental Law Association.

- Greenpeace said in a submission that the "only sensible solution to the problem is to develop a toxics management strategy for the province that focusses on reducing the quantity of toxic waste produced."

A public misconception about special waste management, occasionally reported in the media and repeated by individuals and groups in meetings with the Committee, concerns radioactive and nuclear wastes.

Radioactive and nuclear wastes are not part of British Columbia's special waste management program. These wastes are being given "extra-special" consideration under programs separate from the mandate of the Special Waste Advisory Committee.

INDUSTRIAL CONCERNS

Changes in liability insurance coverage have had an impact on industry and the manner in which potential harmful products are handled. Since the Bopal disaster in India, companies can no longer purchase insurance coverage for accidental spills.

In the past, industry in North America considered landfills to be the answer to disposal of untreated special wastes. However, now that governments are closing existing landfills because of pollution concerns and not approving new sites for future use, industry is reviewing its position.

The cost of waste treatment and disposal is the major industrial concern. Industry needs a level playing field to compete with industry in other provinces and other countries. While major firms have the resources and technical expertise to treat special wastes "in-house," the medium and smaller firms will be dependent on the province's special waste facility.

In meetings with the Committee, the British Columbia Joint Industry Council expressed concerns that the facility would be a "white elephant" that would cost more and more to justify. Other submissions were received from the B.C. Paint Manufacturers' Association, the Dry Cleaners' Association of B.C., the Service Station Association and farmers.

The Special Waste Regulation for British Columbia, effective April 1, 1988, means that industry is now faced with disposing of wastes in a responsible, effective manner. Concerns were expressed by some large industry representatives that waste permits now in effect in the Province would be cancelled or reduced (i.e., amounts of waste now being released would be restricted and/or removed). The federal Workplace Hazardous Materials Information System (WHMIS) legislation which becomes effective in October 1988 will bring even more focus on special wastes in the workplace.

Despite general industrial concerns over disposal costs, the costs associated with the Envirochem proposal are considered by industry to compare favorably with costs elsewhere and will encourage use of the plant by industry. The plant is viewed, with few exceptions, as a necessary step to improve British Columbia's industrial base and encourage future development and new technologies.

MUNICIPAL CONSIDERATIONS

It became apparent to the Committee in its travels throughout British Columbia that elected officials, municipal dump operators and employees did not grasp the ramifications of the Special Waste Regulation. Many had no idea of what existing dumps contain, no system of security, and no plan of operation to identify different locations in the dump for various materials. The Committee learned that some dumps have no gates and the public has access 24 hours per day.

Bearing in mind the experience in the United States with landfills and the potential for abuse, British Columbians require substantial education. Even though the province's Special Waste Regulation is not retroactive, the whole operation of municipal dumps must be reviewed.

The insurance industry has put municipalities on notice that there are real limits to their coverage. It is not mandatory that municipalities supervise the operation of landfills to avoid excessive exposure.

The Ministry of Environment should accept the challenge to assist municipalities in complying with the Special Waste Regulation. The Ministry should immediately begin a program of evaluation of all municipal landfills and establish operating standards and training for personnel.

In Europe, the Committee learned that illegal dumping of special wastes was taking place in small municipal landfills more than 20 years after legislation was enacted. Successful special waste programs in other countries have involved local governments. Householders in those jurisdictions are required to separate wastes so that potentially hazardous substances are not sent to municipal landfills. Depots to receive the waste are part of the collection system and monitoring of landfills is carried out.

No doubt, British Columbia taxpayers will be unhappy with higher waste collection costs. However, B.C. municipalities really have no acceptable choice if maintaining a clean and safe environment is considered important.

REGULATIONS AND ENFORCEMENT

Government regulations and enforcement will be the driving force of the special waste management program. No matter how elaborate the facility or how detailed the collection system, the program will not succeed without the political will on behalf of Government to monitor an enforce the regulations.

In Denmark, after approximately 20 years, the government has finally resolved that low treatment costs and education are not sufficient to ensure success. Government environmental employees in Denmark stress that enforcement is essential. Denmark is currently undertaking a country-wide computer study of waste generation which will be correlated with the amounts arriving at the special waste facility. Comparing the amounts arriving at the facility with the known generation estimates assists the monitoring agency to investigate the "short-fall".

Using data from the computer survey, Denmark hopes to begin an effective monitoring and enforcement program to support its facility and control illegal disposal of hazardous wastes in municipal landfills.

Finland indicated similar concerns on behalf of its facility management. Management was constantly pushing the Department of Environment for increased surveillance.

The facility in Finland has six employees who cover the country selling the use of the plant. They also help educate industry in handling wastes and generally assist the process. However, it is safe to assume their title could have been "investigators". This is an area in which the facility management should not be involved. The enforcement roll must be in the hands of the Ministry of Environment and Parks. The public will view the plant personnel as self-serving. The public perception is that government employees more likely will do what is best for the environment and the public.

EDUCATION

The Committee found that the general public is quite unaware of the dangers of some special wastes. A public education program is required. Unless a community is aware of environmental hazards and unless it wants a clean environment, it will not have one because it's not possible to monitor the activities of every special waste generator.

An information program, including videos, brochures and displays, should be developed for the public and the school system and, as well, the Ministry of Education should consider the program developed for elementary schools by the Recycling Council of British Columbia.

Industry also must be informed about the hazards of special wastes to workers. The Workers' Compensation Board, the Government and B.C. Special Waste Services Inc. should work together to develop appropriate materials.

The Federal Government is currently developing an education program for the public known as the Workplace Hazardous Materials Information System (WHMIS). This will help the educational effort in the workplace. However, a more comprehensive information program is required for the general public.

RESEARCH AND DEVELOPMENT

Special wastes are attracting considerable interest throughout the world as the hazard to our global environment is becoming appreciated. There is a vast amount of research underway and there will be more as new products are introduced into the environment.

Research grants are available through such organizations as the National Research Council and the Institute for Chemical Science and Technology, a Canadian consortium that is supporting research in the management of special wastes. The special waste facility will require a laboratory and grants might be available for PhD's to do research in association with the standard laboratory studies needed to operate the special waste neutralizing process.

The facility becomes, by its nature, a working model for research and this role is very important to improve the image of the plant and the community. The research would involve such areas as better methods of re-use and recycling, new products entering the waste stream, and interaction with municipal waste streams.

SELECTION OF THE OPERATOR

The Committee recommended an operator in an interim report to the Minister of Environment and Parks in December 1987 (Appendix XXII). The proponent chosen was the Envirochem Group, consisting of Envirochem Services, Ensco Incorporated, Sandwell Swan Wooster and Stablex Canada. This consortium later formed a new company, British Columbia Special Waste Services, Inc., to construct and operate the special waste facilities.

The Envirochem Group was among the most experienced of the proponents in the treatment of special wastes, including hospital wastes. The group's modular incinerator system can function with a lower volume of wastes than any of the other systems proposed. In addition, Envirochem has a wide knowledge of the volumes and sites of special wastes within the province.

This company offered the best proposal in terms of timing and operational flexibility. The modular nature of the incineration process proposed would make it possible for the company to have its system in operation within 18 months of completion of permitting. In addition, the system could easily adapt to changing waste streams. Stablex Canada is one of North America's most experienced companies in the solidification of special waste residues. The group has more than adequate financing.

Envirochem's proposed capital cost was one of the lowest at $20,300.00, the minimum volume of the waste stream required for financial viability was the lowest at 17,000 tonnes, and price to the generator was one of the lowest at an average cost of $630 per tonne.

Envirochem has excellent experience as consultants in the field of special wastes in the province. In addition, the company made it clear to the Committee that it will cooperate with other companies already involved in the handling of special wastes in British Columbia.

The operator and the provincial government through enforcement of regulations will determine whether British Columbia's special waste program is a success or failure. However, it is important that the operator functions in a manner that the public does not perceive it as a policeman in the process.

SITE RECOMMENDATIONS

Several excellent communities indicated interest in being considered as possible candidates to host the treatment facility.

At the invitation of communities and in consultation with the Company, the Committee visited Cranbrook, the Regional District of East Kootenay, Fort Nelson, Tumbler Ridge, Princeton, Merritt, Kamloops and the Ashcroft-Cache Creek area.

In the case of Ashcroft and Cache Creek, elected local officials and representatives of the Thompson-Nicola Regional District sought information on the facility at the suggestion of the business community. Following an information meeting which was open to the public, an ad hoc committee was formed in the community to seek public input as to whether to proceed in the process.

Deciding to continue, the local committee asked the Special Waste Advisory Committee and B.C. Special Waste Services Inc. for a meeting to plan a community information program. The local committee and the business communities of Ashcroft and Cache Creek demonstrated considerable leadership in undertaking an active information program. The program included a cable TV talk show, newspaper articles and advertisements, meetings with the Committee and the operator and an invitation to the Minister of the Environment to address a public meeting. During the community information program, the Committee and the operator spent 10 days in the area conducting store-front open houses.

The local committee decided that an indication of community acceptance was required before negotiations with B.C. Special Waste Services Inc. could continue. In consultation with the Committee, it was decided that an opinion survey of all eligible voters (based on municipal elections held in November 1987) would be undertaken. This survey included all eligible voters within a 20-kilometre radius of the communities. The exact boundaries of the survey were specified at the east and west limits of Area I and E of the Thompson-Nicola Regional District. The northern and southern boundaries were placed at 20 kilometres from the geographic centre between Ashcroft and Cache Creek. These boundaries were acceptable to the Committee (see Appendix XX).

Balloting took place on May 12 and 960 citizens voted. This represented approximately 58 percent of eligible voters. The opinion survey indicated that 60 percent of the voters favored continuing the process towards eventual siting of a special waste treatment facility in the area. The counting of ballots was supervised by a member of the Special Waste Advisory Committee.

The Committee recommends that the process for site selection be continued in the Ashcroft-Cache Creek area based on the public acceptance that has been expressed (see Appendix XX). The area is considered among the most suitable in British Columbia for a special waste treatment facility, having a dry climate and low rainfall.

PROVINCIAL SPECIAL WASTE ADVISORY COMMITTEE

The Committee recommends that the Minister of Environment and Parks establish a permanent Provincial Special Waste Advisory Committee to oversee the provincial needs for improving the environment. This committee should include senior representatives from industry, education, the medical association, environmental groups, the operator, the community monitoring committee and the scientific community.

The proposed terms of reference for the Provincial Committee are to:

- Ensure that special waste educational programs are suitable, acceptable and properly disseminated.

- Ensure that a computer data base is established, containing the latest information on special wastes, research, treatment technology, re-use and recycling.

- Ensure that scientific research and new methodology concerning waste reduction, recycling, re-use and treatment are appreciated by the public and made available to industry when appropriate.

- Liaise with and counsel the public, the operator and the Government, giving special consideration to enforcement of the regulations.

- Offer advice to the Government on changes to regulations as new products are introduced into the environment.

- Encourage the establishment of accessible collection sites in municipalities for the public and small waste generators.

- Encourage the establishment of transfer stations at appropriate sites throughout the province.

- Review existing permits in light of the regulations, including municipal use of waterways.

The Committee believes that, to be effective, a secretary should be provided and that the expenses of the Committee be provided by the Government.

COMMUNITY MONITORING COMMITTEE

In our review of successful programs in other jurisdictions, we found the community monitoring committee to be of great value. It becomes a conduit between the facility operator and the host community. It helps to resolve problems, anticipates potential conflicts, and gives the community direct influence in a safe operation.

A community monitoring committee in B.C. should consist of two or three local members appointed by local elected officials. It would report to local elected officials and to the provincial committee.

RECOMMENDATIONS

The Committee's major recommendations are as follows:

1. That the Ministry of Environment and Parks develop effective means to enforce its new special waste regulations.

2. That the Government and B.C. Special Waste Services Inc. jointly conduct a survey to establish estimates of special waste volumes.

3. That education of the public and waste generators be made a priority on a continuing basis, in schools, universities and in the workplace.

4. The operator must establish and maintain good relations with the host community and will have a continuing role to play with customers, educational programs and sales programs.

5. That research and development be made an integral part of the special waste management process to ensure that optimal recycling, reuse and waste reduction occur and that treatment processes and technologies continue to be the best available.

6. That a permanent provincial special waste advisory committee be established to assist waste generators, the public, government and the operator in managing special wastes.

7. That a monitoring committee be established in the host community, reporting to the local government and the provincial committee.

8. The operator of the special waste treatment facility will be responsible for ensuring that the facility meets the regulations in all aspects, and that appropriate data regarding operation and compliance is available to both the government monitoring service and the community monitoring committee.

9. That the Government begin a program of evaluation on all municipal landfills, establish operating standards and training for municipal landfill workers, initiate programs of waste separation for households, and establish special waste collection points in municipalities.

10. That a moratorium on other new special waste offsite treatment facilities be maintained until B.C. Special Waste Services Inc., begins to treat special wastes.

11. That personnel be hired, trained and provided with adequate budgets to staff government surveillance teams. At least one person should be provided for each economic zone in the province.

12. That all levels of management in industry and labor, such as unions and the Workers' Compensation Board, be contacted to upgrade awareness levels and address concerns.

13. That programs of waste separation for the householder be initiated and collection points established with the involvement of municipal staff.

14. That the special waste facility be located in the Ashcroft-Cache Creek area where geological and climatic conditions appear favorable and because of local public acceptance.

APPENDICES

I. TERMS OF REFERENCE

II. NEWS MEDIA AND THE COMMITTEE
- Press Resleases

III. WE WANT YOUR VIEWS...

IV. INVITATION TO INTEREST GROUPS

V. SUBMISSION REGISTER

VI. REQUEST FOR QUALIFICATION ADVERTISEMENT
- List of Newspapers

VII. REQUEST FOR QUALIFICATIONS
- Response List

VIII. REQUEST FOR PROPOSALS
- Response List
- Evaluation Matrix

IX. JOHN GRACE'S INCINERATION REPORT

X. MUNICIPALITIES and REGIONAL DISTRICTS
- Letters to Municipalities

XI. OPEN HOUSES
- Advertisement
- Schedule

XII. TECHNICAL REVIEW
- Letters of Initiation
- Attendance List

XIII. MEETINGS IN OFFICE

XIV. EUROPEAN TOUR

XV. COMMUNITY VISITS

XVI. FACILITIES VISITS

XVII. PUBLIC MEETINGS ADVERTISEMENT

XVIII. PUBLIC MEETING TRANSCRIPT

APPENDICES (Cont'd.)

XIX. SELECTED SUBMISSIONS

XX. MUNICIPAL SUBMISSION

XXI. BIBLIOGRAPHY

XXII. INTERIM REPORT

XXIII. FACT SHEETS

XXIV. PROGRESS REPORTS

XXV. ORAL REVIEW OCT. 21, 1988 TRANSCRIPT